

12. Dynacalc main menu offers you a graphics mode (item G). This was not implemented which was most disappointing.

once extracted them it "remembers" and the same variable can be used again even though it does not appear a second time in the data-file.

- skip one or more fields in the datafile. For example, you could use the same datafile for addressing form letters (which do not require the telephone number entries) as to print out a telephone directory (which does).
- accept user input so that, as each letter is merged, it appears on the screen with the prompt and you have the chance to type in some variable comment: an effortless way of making mass-produced correspondence seem more personal.
- be used with the *Stylograph* formatting commands so that it is possible to right-justify the text, even though the variables that are inserted may be of different lengths. This is a good feature often missing from mail-merge programs.

Sadly the mail-merge system has no "logic" so that you cannot produce really professional correspondence. For example it would not take the necessary logical steps to print "Yours Sincerely" when you address your correspondent by name and "Yours Faithfully" when you use "Dear Sir". If your business is a professional one, where you will be judged by the quality of your correspondence, this program will not be adequate for you. If, however, you are selling soap or security systems and feel people will judge you by your product, not by your letters, you may decide it is perfectly acceptable.

Spelling Checker

The spelling checker uses a 40,000 word dictionary, plus a supplementary dictionary which the user can compile with, for example, technical jargon. When you run the spelling checker over a text file it will tell you how many words have been scanned and various

other bits of information (Figure 11) and will give you a list of all the words where the spelling is in question. You can then review all those words and select one of five options for each:

- ignore it
- display it in context, which is done separately, afterwards, for all the words so chosen and which offers the only opportunity to change words. Incorrect words are displayed within the line in which they occur with an arrow pointing to the word in question. They can then be ignored, added to the dictionary, flagged for editing or changed. This is a quick way of carrying out spelling corrections that does not require you to plough your way through the entire file; you are able to concentrate only on the errors: a true piece of "management by exception".
- add the word to your personal dictionary because it is legitimate and should not be marked in future, or...
- ...if you want to do it the old hard way, then you flag all the errors and, when you are back in the editor, plough through the file, and use the search-and-replace function to correct them. This would only be quicker if you had repeatedly mis-spelled a given word in the same way.

Dynacalc Spreadsheet

I liked this program which is reminiscent of the *Lotus 123* clones which I described in my recent article on MS-DOS and the Master 512 (*Down to Business*, May 1987). However, though the main menu (Figure 12) offers you a graphics mode this was not implemented which was disappointing. Operation of all other commands, however, is very slick: the arrow keys work perfectly well and, if you want to move longer distances, there is a goto command. I would have liked a command to move the cursor one screen at a time.

As well as the standard range of commands to edit, copy, delete, blank and move any part of the work-sheet and to print, save and load files, alter column widths and insert new rows or columns there are a number of less common commands available. An "attributes" menu allows you to:

- "toggle" your borders on or off
- adjust the number of times that recalculation will take place if you want to "iterate" (work step-by-step)
- alter the calculation order (ie to calculate rows before columns)
- switch off automatic recalculation to save time when you are entering data
- report the total size of the active part of your work sheet and
- set the printer attributes. These include:
 - a) printing the borders or not
 - b) whether to have an initial form-feed
 - c) adjustment to the number of lines per page
 - d) switch pagination on or off
 - e) set line spacing and printer width

● a generous range of formats of text within the cell including:

- a) centred
- b) enhanced (bold)
- c) left or right justification: labels to the left and numerical values to the right
- d) protecting (or unprotecting) a cell so the value cannot be changed in error
- e) setting tab stops and
- f) "repeating" format that repeats a given text throughout a cell: useful for creating borders or lines of asterisks.

You can create macros — only *Dynacalc* scorns such a confusing name and calls them "key-stroke files", so you know exactly what they are: files in which you save frequently used sequences of key-strokes to save time and avoid errors. There is a system for labelling entries. Thus you might label individual lines as SALES, EXPENDITURE and PROFIT and thereafter you can refer to them by those names which will be far easier to remember than calling them by their cell references: J19..J27 for example! You can divide the spreadsheet into separate windows (Figure 13) and either synchronize two windows or allow them to scroll independently.

As well as the standard arithmetic functions, the spreadsheet can handle the modulus (the remainder left after division by an integer), powers and a number of relationships: equals, not equals, greater than, or equal to and so on. There are logarithms to base 10 and base e, exponentials and square roots and squares. Other numerical functions include one that rounds a number to a specified power of 10 (ie round thousands or round billions depending on how tycoonish you are), a random number generator, and functions to give you the integer value or the positive or negative sign of a number. Numbers can be accurate to 15 digits and parentheses (brackets) can be used to determine the order of arithmetic and can be "nested" to any depth.

However these are only the tip of the iceberg. *Dynacalc* has a whole range of functions that are invoked by the curly @ sign and you can use them no matter where you are on the spreadsheet. For example if you type in @SQ followed by a number then the square root of that number will be displayed in the cell. Similar functions include some that require no number at all such as: @PI which gives you the value of PI @COLUMN and @ROW which give the number of the row or column on the spreadsheet @TODAY which gives you the date, measured in days since the last day of December 1599. The value of this is that, by entering @TODAY for two different dates, you can readily calculate the number of days that elapsed between them. Other functions relate to a list of cell addresses such as:

- @AVERAGE which would give you the average value of the contents of those cells
- @COUNT which tells you how many values they contain
- @MAX
- @STDDEV which gives you the standard deviation
- @SUM
- @SUMSQ which gives the sum of the squares.

Some of these will also deal with rectangular blocks of worksheet, for example to sum all the values of a rectangle five columns wide and three deep. Trigonometric functions include arc cosines, sines and tangents and angles can be expressed in degrees or radians. The built-in financial functions include:

- the amount of depreciation in a year after you have specified the depreciation rate, the original price and the year in question: or inversely...
- ...the yearly rate of depreciation if you specify the other three
- net present value, present value and future value of annuities
- regular loan payments
- initial investments required to produce a stated amount
- future value of a single investment and...
- ...effective interest rate.

13. Screen split vertically and horizontally in Dynacalc spreadsheet.

Amount	Dep't.	Food	Utility	Housing	Medical
1,234.00	Housing			1,234.00	
63.95	Food	63.95			
28.00	Food	28.00			
189.00	Medical				189.00
7.50	Misc.				
224.69	Housing			224.69	
1,500.00	Utility		1,500.00		
(358.00)	Utility		(358.00)		
60.00	Misc.				
1.45	Misc.				
98.00	Medical				
180.00	Utility			180.00	
47.50	Food	47.50			
280.00	Medical				280.00
57.00	Food	57.00			
7,067.89		194.45	1,658.00	1,458.69	

Logical functions include:

- if
- and
- or
- exclusive or
- not
- a function that is true if another is either:
 - a) not available
 - b) has an error
 - c) is a value rather than a label or
 - d) is a label rather than a value.

Label functions will tell you the length of a given string of characters within a label.

However, perhaps the best thing of all about *Dynacalc* is that all these powerful methods are explained in help screens. They are extremely easy to find: can be summoned by typing a ? whenever you are in doubt as to which to use. The handbook section is perfectly adequate except that the text is small and there is no alphabetical index but the admirable help function offsets this disadvantage.

Dynacalc seemed to me an excellent product, particularly attractive because of its ease of use, excellent help screens, wide range of financial functions and scope for operating with a split screen. I conclude that it would perform any demands any reasonable business person might make of it.

Sculptor

Sculptor (Figure 14) is a relational database, incorporating a fourth generation language. Relational databases, as explained in *Down to Business, A&B*, January 1987, are those that can handle more than one data file and relate or "join" them, one to another, in order to answer queries, display screen forms or produce reports. The first three generations of computer languages were:

- 1 Machine code: endless strings of 00100110 11001100 00110001
- 2 Assembly code: endless lists of STA LDA INY and the rest.
- 3 High level languages, like BASIC, COBOL, PASCAL and C which utter remarks like

"DEF PROCLOAD"

and
 "if (write (fdo,buffer,nbr+read)!=nbr+read)"

You will notice that there is an (albeit slight) increase in readability as you go down the list. A fourth generation language (or "4GL") takes this a step further. It is one that uses mainly recognizable English words, in some semblance of English grammatical sentences such as *Sculptor*'s:

"if order+qty = 0 then clear item price"
Sculptor is "made in England" as becomes obvious from its compactness: both of the code (the entire suite comes on a single floppy) and the handbook which is A5 yet less than an inch thick and beautifully produced and lucid. Compactness by no means implies feebleness: *Sculptor* is in some ways more powerful and more flexible than many 4GLs but the sad news for many BBC users is that it is designed for programmers, not end-users, and is far less readable than some other 4GLs such as Informix. It has really only been included in the *Upgrade* package because it is one of the few relational databases available on OS9.

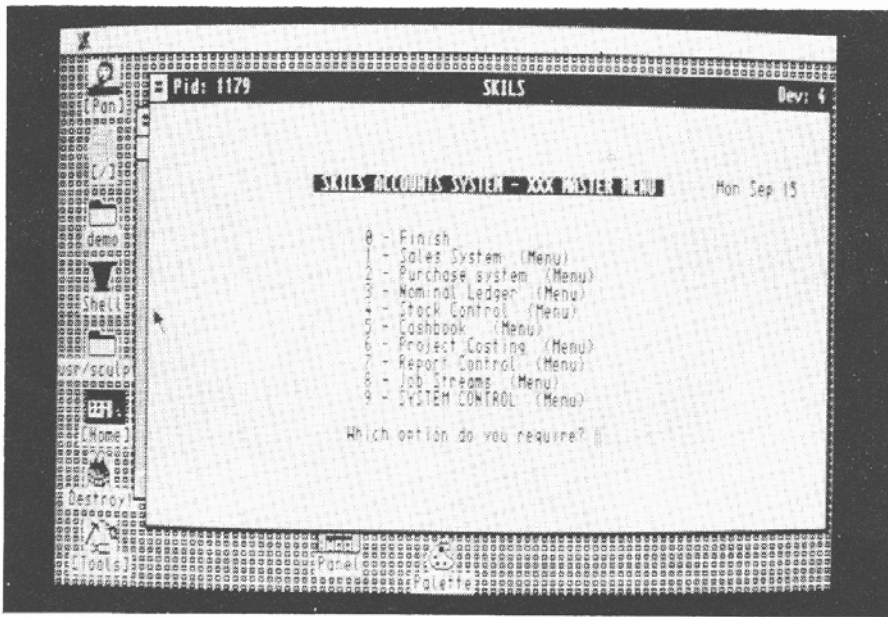
Sculptor's programming language for setting up a database, creating screen forms or reports is extremely economical and has some superb features, in particular a scroll function which sets aside part of a screen form as a "scroll box" in which data, from records other than the one currently displayed, is presented in a table through which you can scroll at will.

Although it is a fourth generation language a *Sculptor* script rather resembles a BASIC program, in that it is possible to define and call subroutines and to program the "flow of control" to jump around using labelled program lines and "goto" commands. It is once one starts to employ this capability that the non-programmer runs out of skill: I found it reasonably straightforward to produce a basic database and simple query screens and report formats. I anticipate that, because the handbook is so clear and pleasant to use,

C O N T I N U E S ►

14. Sculptor is a relational database, incorporating a fourth generation language.

SCULPTOR
Features:
Data Base Manager
Keyed files
Interactive forms compiler
Interactive report compiler
BASIC-like language syntax
Easily transportable
Supports XREF files
Multi-Level B-tree Indexing



15. SKILLS from Skytronics Ltd (shown running under UNIX on a Torch Triple X): It is an integrated suite of accounting software entirely written in Sculptor.

within a few weeks one would master the more complex exercises.

Great for programming enthusiasts because, with these, it is possible to create almost any business software, no matter how complex the inter-relationships between files. For example I know of an integrated suite of accounting software (Figure 15), entirely written in *Sculptor*, which one multi-million pound consultancy business told me they chose as being better than the famous *Tetra-plan*. However, I doubt whether many business folk will tackle writing their own accounts packages; most would opt for a simple database that, if less powerful, is at all costs easy to use.

There are also some important features missing from *Sculptor*:

- There is no interactive query language: the kind with which you can say "Find me all the firms in Teesside that buy steel and have more than a hundred workers".

However *Sculptor* includes a "rough and ready" query facility to extract information from any *Sculptor* file and from one, but no more than one, file joined to it. This omission is not important if *Sculptor* is purely used as a tool for creating complete systems but would render it unsuitable for the individual "power user" who has taken the trouble to create a large database and wants to be able to handle one-off queries promptly and efficiently.

- There is no automatic facility to import or export files to or from a word-processor or spreadsheet say. A technical note inserted in the manual explains how this can be overcome but, again, it is a job for a programmer, because *Sculptor* database files have a particular structure which makes them very compact and faster, to access and to insert new records, than most databases.

- *Sculptor* uses B-Tree search methods to increase speed and, as a result, there is no wildcard feature when querying. However two "relational operators" are provided which

enable you to handle a string that contains, or begins with, a specified substring.

- *Sculptor* cannot automatically generate forms that will occupy more than one screen; I found it necessary to "fudge" a large screen form by leaving out half the fields, automatically compiling and then putting the extra fields in and recompiling; a nuisance to say the least!

- Its handling of the compiling and debugging process is not very helpful: it lists the compiling errors, but in a separate text, so you have to remember them, then load the correct text into the editor to rectify it. The absence of a list of error messages from the handbook was particularly vexing.

- The compiler is not very rigorous: it allowed me to produce a muddled screenform, on which fields overlapped, without complaint. However, MPD point out that many programmers welcome this flexibility and that there is sufficient rigour to prevent run-time errors without trying to teach the programmer his or her job.

- Finally, my favourite hate: you need a carriage return to confirm selections from the menus and, as these use numbers rather than letters, this may mean three key strokes to select menu item number 10.

So much for criticisms. There are also a number of features I particularly liked in addition to its great flexibility:

- It is very sophisticated in handling screen displays, offering colours and italics as well as high-lighting.

- The report generator has some useful features: in particular to start or end at any record and the automatic alignment of columns of data with the headings above them.

- There is a useful group of utilities that will rename a file, display data about it and check indices and rebuild them if necessary.

- There is a language configuration system that enables you to alter all the screen prompts and headings to French or German while still retaining the same scripts.

- There is a facility to execute shell scripts or operating system commands contained within database fields.

Although I like *Sculptor* and enjoy exploring its hidden depths as my experience and skill grow, it has two particular drawbacks. Firstly, the lack of an interactive query language is a limitation and secondly, as part of a business software package, it is too difficult for the non-programmer to use, although the excellent handbook somewhat offsets this.

Assessment

This is a difficult one! On the one hand we have this apparently magnificent package, at an extremely attractive price. It contains a 68008: a powerful (if not true 32-bit) 68000 series processor, a hard disc with as much space as a small business will ever want to use, a UNIX-like command language with a shell and several different excellent programming languages and an attractive bundle of applications software.

On the other hand there are some very serious drawbacks:

- OS9 is not being used extensively in business in Britain and there is not a lot of software around. Seed promised to let me know of the accounting packages that would be available but I haven't yet received this information.

- Of the packages provided, *Stylograph* is not a good word processor and its Mailmerge function will not produce truly professional form letters. *Dynacalc* is an excellent spreadsheet and would provide everything most small businesses will need. *Sculptor* is an enormously powerful tool but very difficult to use; its writers themselves say it is designed for professional programmers, not for end users. However, it is only slightly more difficult than most end users can manage; if you are keen and enjoy working at programming, and the excellent documentation will help you. Otherwise, frankly, forget it.

- Following the liquidation of Seed, future support is uncertain and must await an definitive statement from Cumana.

- The range of tools available under OS9 is much less powerful and extensive than under UNIX.

Offsetting these snags there is a big plus: the ability to switch from OS9 back to your existing BBC system; especially if you have other activities: games or educational programs or graphics, that you do not want to scrap.

So, should you buy it? Only if you have sufficient computer expertise to program *Sculptor* yourself to produce software not available off-the-shelf, and to puzzle out problems with OS9 without having to pick up the telephone. Then it is good value for money and will pay returns, particularly if you have strong reasons for wanting to keep your BBC because of other programs you may be running. But if you are anything less than expert, go for a system where there is more software and more support available. *Further details from Cumana, Pines Trading Estate, Broad Street, Guildford, Surrey GU3 3BH Tel 0483 503121*